

Pending Claims

Claim 1 (Previously Presented): An imaging system comprising:

a display monitor;

an operator interface comprising a first control input device for activating adaptive grayscale adjustment, a second control input device for setting gain, a third control input device for setting dynamic range, and a fourth control input device for activating image capture;

a scanning subsystem for acquiring raw data; and

an image processing system for processing acquired raw data to display an image frame of imaging data on said display monitor, said image processing system comprising memory for storing displayed image frames, grayscale mappings, upper and lower grayscale levels for use in adaptive grayscale adjustment, gain settings, and dynamic range settings, and a computer programmed to perform the following steps:

(a) controlling said display monitor to display an image frame of imaging data derived from acquired raw data processed in accordance with the grayscale mapping, the gain setting and the dynamic range setting currently stored in said memory;

(b) monitoring the state of said first control input device to detect a change in the state of said first control input device corresponding to activation of adaptive grayscale adjustment;

(c) in response to detection of such a change in the state of said first control input device, adjusting the contrast of said image frame by performing adaptive grayscale adjustment using the upper and lower grayscale levels currently stored in said memory, and controlling said display

monitor to display said contrast-adjusted version of said image frame;

(d) monitoring the state of said second and third control input devices, during a first predetermined time period subsequent to said change in the state of said first control input device, to detect a change in the state of said second or third control input devices that results in a second gain setting different than said first gain setting or a second dynamic range setting different than said first dynamic range setting;

(e) in response to detection of such a change in the state of said second or third control input device, further adjusting the contrast of said image frame in accordance with said changed gain or dynamic range setting, and controlling said display monitor to display said further contrast-adjusted version of said image frame;

(f) monitoring the states of said second, third and fourth control input devices to detect whether either of the following conditions is satisfied: (i) the changed state of said second or third control input device is stabilized for a second predetermined time period immediately subsequent to said change in the state of said second or third control input device before any other system control change is made by the operator; or (ii) the state of said fourth control input device is changed to a state corresponding to activation of an image capture operation while the changed state of said second and/or third control input device is still in effect;

(g) if either of said conditions is satisfied, analyzing the pixel intensity histogram of said further contrast-adjusted version of said image frame to determine the operator-achieved upper and lower grayscale levels; and

(h) storing said operator-achieved upper and lower grayscale levels in said memory in place of the upper and lower grayscale levels used in step (c).

Claims 2-4 (Canceled).

Claim 5 (Previously Presented): The imaging system as recited in claim 1, wherein said computer is further programmed to generate, during a subsequent adaptive grayscale adjustment, a gray map that is a function of said stored operator-achieved upper and lower grayscale levels.

Claims 6-10 (Canceled).

Claim 11 (Previously Presented): The imaging system as recited in claim 1, wherein said computer is further programmed to store said operator-achieved upper and lower grayscale levels in association with a system user ID inputted via said operator interface.

Claim 12 (Previously Presented): The imaging system as recited in claim 11, wherein said computer is further programmed to store an application type or exam type in association with said operator-achieved upper and lower grayscale levels and said system user ID.

Claim 13 (Previously Presented): The imaging system as recited in claim 11, wherein said computer is further programmed to control said display monitor to display a message, prior to said storing step, requesting confirmation from the system user that operator-achieved upper and lower grayscale levels should be stored.

Claim 14 (Previously Presented): An imaging system comprising:

a display monitor;

an operator interface comprising a first control input device for activating adaptive grayscale adjustment, a second control input device for setting gain, a third control input device for setting dynamic range, and a fourth control input device for activating image capture;

a scanning subsystem for acquiring raw data; and

an image processing system for processing acquired raw data to display an image frame of imaging data on said display monitor, said image processing system comprising memory for storing displayed image frames, grayscale mappings, upper and lower grayscale levels for use in adaptive grayscale adjustment, gain settings, and dynamic range settings, and a computer programmed to perform the following steps:

(a) controlling said display monitor to display an image frame of imaging data derived from acquired raw data processed in accordance with the grayscale mapping, the gain setting and the dynamic range setting currently stored in said memory;

(b) monitoring the state of said first control input device to detect a change in the state of said first control input device corresponding to activation of adaptive grayscale adjustment;

(c) in response to detection of such a change in the state of said first control input device, adjusting the contrast of said image frame by performing adaptive grayscale adjustment using the upper and lower grayscale levels currently stored in said memory, and controlling said display monitor to display said contrast-adjusted version of said image frame;

(d) monitoring the state of said second and third control input devices, during a first predetermined time period subsequent to said change in the state of said first control

input device, to detect a change in the state of said second or third control input devices that results in a second gain setting different than said first gain setting or a second dynamic range setting different than said first dynamic range setting;

(e) in response to detection of such a change in the state of said second or third control input device, further adjusting the contrast of said image frame in accordance with said changed gain or dynamic range setting, and controlling said display monitor to display said further contrast-adjusted version of said image frame;

(f) monitoring the states of said second, third and fourth control input devices to detect whether either of the following conditions is satisfied: (i) the changed state of said second or third control input device is stabilized for a second predetermined time period immediately subsequent to said change in the state of said second or third control input device before any other system control change is made by the operator; or (ii) the state of said fourth control input device is changed to a state corresponding to activation of an image capture operation while the changed state of said second and/or third control input device is still in effect;

(g) if either of said conditions is satisfied, analyzing the pixel intensity histogram of said further contrast-adjusted version of said image frame to determine the operator-achieved upper and lower grayscale levels; and

(h) storing in said memory new upper and lower grayscale levels in place of the upper and lower grayscale levels used in step (c), said new upper and lower grayscale levels being a function of said operator-achieved upper and lower grayscale levels.

Claim 15 (Original): The imaging system as recited in claim 14, wherein said new upper grayscale level is an average of a first plurality of values, said first plurality including at least said upper grayscale level used in step (c) and said operator-achieved upper grayscale level, and said new lower grayscale level is an average of a second plurality of values, said second plurality including at least said lower grayscale level used in step (c) and said operator-achieved lower grayscale level.

Claims 16 and 17 (Canceled).

Claim 18 (Previously Presented): The imaging system as recited in claim 14, wherein said computer is further programmed to store a system user ID in association with said operator-achieved upper and lower grayscale levels.

Claims 19-32 (Canceled).